

Course Title	Computer Aided Design Methodology				
Course Code	ME203				
Course Type	Compulsory				
Level	BSc (Level 1)				
Year / Semester	2 nd Year / 3 rd Semester				
Teacher's Name	Dr. Antonios Lontos				
ECTS	5	Lectures / week	1	Laboratories/week	3
Course Purpose	Purpose of the course is to understand and learn how to design engineering parts, components and assemblies.				
Learning Outcomes	<p>By the end of the course, students must be able to:</p> <ol style="list-style-type: none"> 1. Apply the advantages of advanced CAD software and the basic principles. 2. Use drawing commands and designing principles of advanced CAD software. 3. Design and modify 2D and 3D mechanical parts. 4. Analyse construction drawings by creating various views. Design mechanical parts that will assemble together. 5. Explain the creation of assembled mechanical parts especially for car components 6. Create solid models of car component, Create assemblies of car components. 7. Use software and web libraries of an advanced CAD software. 				
Prerequisites	ME113	Corequisites	None		
Course Content	<ul style="list-style-type: none"> • SolidWorks basics: Design Intent, File References, Opening Files, The SolidWorks User Interface • Sketching and drawings creation: 2D Sketching, Stages in the Process, Saving Files, Sketching, Sketch Entities, Basic Sketching, Rules That Govern Sketches, Design Intent, Sketch Relations, Dimensions, Extrude, Sketching Guidelines • Part modeling: Basic Modeling, Choosing the Best Profile, Choosing the Sketch Plane, Details of the Part, View Options, Filletting, Editing Tools, Detailing Basics, Drawing Views, Dimensioning, Changing Parameters, Revolved Features, Edit Material, Mass Properties, Part Editing • 3D solid modelling: Camshaft, Crankshaft, Piston, Cylinders, Valves, Gearbox assembly, Independent Front Suspension assembly, Roller chain timing drive assembly, Brake system assembly 				

	<ul style="list-style-type: none"> • Creation of assemblies: Creating and editing of assemblies, Analyzing the Assembly, Checking for Clearances, Changing the Values of Dimensions, Exploded Assemblies, Explode Line Sketch, Assembly Drawings, Drawing and construction of assembled mechanical parts (car components) • Engineering model libraries: Localization of automotive engineering model libraries on the World Wide Web • Laboratory work: Use of CAD software at computer laboratory.
Teaching Methodology	<p>This subject is based mostly on practical sessions and lectures. Student evaluation is based on assignments, mini practical projects, labour projects, tests and final exam. Illustration of the CAD techniques is based on commercial software. A description is given at the beginning of the course in order for the students to get enough information on the main subjects of the course.</p>
Bibliography	<p>(a) <u>Textbooks:</u></p> <ul style="list-style-type: none"> • Solidworks book and manual <p>(b) <u>References:</u></p> <ul style="list-style-type: none"> • Engineering Drawing and Design, Jay D. Helsel, Dennis R. Short, Cecil Howard Jensen, Glencoe McGraw Hill, 6th Bk&cdr, 2002. • Graphics Concepts with SolidWorks, Richard M. Lueptow, Michael Minbiole Prentice Hall, 2004 • Engineering Drawing and Design, Jay D. Helsel, Dennis R. Short, Cecil Howard Jensen, Glencoe McGraw Hill, 6th Bk&cdr, 2002. • Design Dimensioning and Tolerancing, Bruce A. Wilson, Goodheart-Willox, 2001 • Engineering Drawing & Design by David A. Madsen (Editor), Delmar Learning, 3rd edition, 2001. • Principles of Computer Aided Design and Manufacturing, Farid M. Amirouche, Prentice Hall, 2004 • Engineering Design Graphics, James H. Earle, Prentice Hall, 2004 • Engineering Graphics, Frederick E. Giesecke, Alva Mitchell, Prentice Hall, 2004
Assessment	<p>The assessment consists of following methods for both the theoretical and practical part of the course. Each assessment method is assigned with a weight which is used for the calculation of the final grade.</p> <p style="text-align: center;">Mid-term exam: 40% Final Exam: 60%</p>
Language	English